

REMARKS

No claims are amended, added or cancelled, whereby claims 1-19 are pending and presented for review. Favorable reconsideration and allowance are requested in light of the remarks which follow.

1. Prior Art Rejections

The Examiner rejected claims 1-3, 5-9, and 18 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 1,335,310 to Yeakley (herein “the Yeakley patent”). Claims 4 and 16 are rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over the Yeakley patent in view of U.S. Patent No. 4,688,439 to Cureton et al. (herein “the Cureton patent”).

Applicants respectfully traverse all rejections, asserting that the Examiner (i) ignored, overlooked, or misinterpreted various limitations in the claims, (ii) misinterpreted and misapplied the cited prior art.

a. Recapitulation of the Invention*

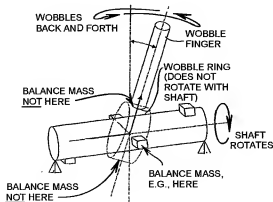
The invention relates to a wobble drive for converting a rotational motion into an oscillating translational motion. The wobble drive includes a rotationally driven rotating element that drives and acts on a wobble element in a manner that tilts the wobble element back and forth. Such back and forth tilting of the wobble element can drive another component into linear translational motion, such as a piston within a percussion mechanism of an impact tool.

Prior art impact tools include wobble drives and wobble fingers that are driven into wobbling motions which are converted into linear motions. Each of such wobble fingers represents a significant imbalance mass that, at faster speeds of motion (several hundred impacts per minute), results in significant additional oscillating bearing loads, acting both on the machine (bearing, housing) and on the operator holding the machine. Since the machines incorporating the wobble drives are often hammer-type devices, the operator is exposed not only to impact loading due to the impacts executed by the hammer during use, but also to the imbalance loading

* This Section 1(a) is presented for background purposes so the Examiner may understand the state of the art and, in general terms, the Applicants' contribution thereto. It is not intended to particularly address the obviation of any particular rejection. That task instead is performed in Section 1(b) below.

resulting from the moving wobble finger. Prolonged operator exposure to such loads and associated vibrations are less than desirable for the user, and can reduce the use-life of the tool itself.

In the present invention, a wobble drive is provided that attenuates the wobble finger imbalanced mass-based oscillating bearing loads. This is done by providing at least one balance mass on a pivot bearing at a location that is spaced from the wobble finger and surprisingly also spaced from a position on the pivot bearing that is on the other side of the wobble ring, radially across from the wobble finger. For example, providing two balance masses that are spaced 90-degrees from the wobble finger can be a suitable configuration. Regardless of the particular configuration or location, the at least one balance mass on the pivot bearing reduces the undesired vibrational forces, increases user comfort, and can increase tool use-life.



ANNOTATED FIG. 3 OF PRESENT APPLICATION

b. Traversal of Rejections

Applicants respectfully traverse the above-referenced rejections and assert that the Examiner misinterpreted and misapplied the cited references, and misinterpreted the claims. The Yeakley patent, alone or combined with the Cureton patent, does not and cannot disclose or suggest each and every element of novel and non-obvious claims 1, 10, 17, and 19.

Independent claims 1, 10, 17, and 19 recite a wobble drive having a pivot bearing that is situated on a shaft in an inclined position and supports a wobble ring thereon. The wobble ring

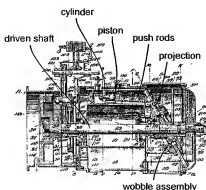
wobbles back and forth upon the shaft without rotating with the shaft. A wobble finger extending radially from the wobble ring and **at least one balance mass is provided on the wobble ring (claims 17 and 19) or the pivot bearing (claim 1)** in a location that is spaced from the wobble finger (or point of intersection of the wobble finger and the wobble ring) and also spaced from a point on the wobble ring that is across from the wobble finger. The wobble finger can maintain essentially an unchanged orientation transversely with respect to the shaft while tilting back and forth longitudinally along the shaft (claim 19). In other words, *the at least one balance mass is provided on the wobble ring or pivot bearing (and is not across from the wobble finger or at an intersection of the wobble finger and ring).*

The Yeakley patent, alone or combined with the Cureton patent, does not and cannot disclose a wobble drive having ***at least one balance mass provided on a wobble ring or pivot bearing (and not across from a wobble finger or at an intersection of the wobble finger and ring or pivot bearing).***

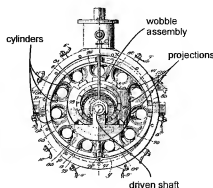
Before addressing the cited Yeakley and Cureton patents specifically, Applicant makes the following general comments regarding their disclosures. Applicant strongly asserts that the Yeakley and Cureton patents are non-analogous art that should not be applied against the present application in a rejection based on obviousness such as the rejection of claims 4 and 16. Yeakley and Cureton disclose wobble plate or swash plate types of internal combustion engines which are fixedly mounted (in a vehicle or otherwise) for use as prime movers. Like other internal combustion engines, those of the Yeakley and Cureton patents have massive components that are configured to withstand heavy-duty combustion-driven reciprocation. For example, the size and power of the internal combustion engine of Yeakley is “large enough to drive large automobiles, trucks, aeroplanes, etc.” (Page 5, Lines 108-109). Design considerations for heavy-duty internal combustion engine components are drastically different from those of handheld and manually manipulated impact tools (such as those in which the present invention is incorporated) where, for example, size/space and weight considerations are of utmost importance. As such, Applicant objects to the use of Yeakley and Cureton in

any regard as being citable against the present application. Nevertheless, for the sake of completeness of argument, Applicant now refers specifically to the teachings of the Yeakley and Cureton patents.

The Yeakley patent discloses a wobble plate or swash plate type of internal combustion engine that includes multiple cylinders (FIG. 2, numbers 1-11) that are arranged parallel to each other. From an end view, the cylinders 1-11 are arranged in a circular manner with a driven shaft 23 that is positioned radially between them. A disc-like wobble assembly (FIG.1, numbers 23', 58), with radially extending projections 62, converts reciprocating movement of pistons 76-86 within respective cylinders 1-11 into rotational movement of the driven shaft 23. In other words, pistons 76-86 sequentially push rods 89 which, in turn, sequentially press against respective projections 62 of the wobble assembly.



the Yeakley patent
FIG. 1 annotated

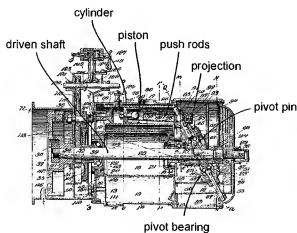


the Yeakley patent
FIG. 2 annotated

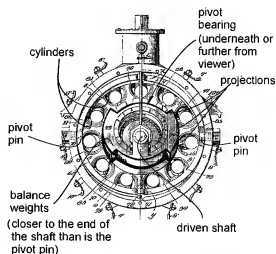
The Examiner relies on the Yeakley patent as supposedly showing this feature, while noting that the Yeakley patent states:

[b]balance weights 73 and 74 are provided on the wabblers and are arranged at right angles to the spindles 65 and 67 and serve to balance the reciprocating part of the ring 68 and parts connecting the wabblers 58 to produce a wabbling motion on the wabblers axis so that it can be counter-balanced. (Page 3, Lines 16-22).

Noting that an applicant may serve as their own lexicographer (MPEP § 2111.01 (IV)), it is readily apparent that Yeakley's use of the phrase "*provided on*" (the wabblor) can only mean "*provided (axially) adjacent*" or *abuts*. For example, the numerous radial projections of the Yeakley wobble assembly prevent affixing balance weights to its outer circumferential surface, whereby the balance weights are instead provided (axially) adjacent or stacked against the wobble assembly, as shown in FIG. 2. It is also clear from FIG. 2 that the masses 73 and 74 are part of an annular structure that sits on a plane that is above (nearer a viewer of FIG. 2) or closer to the end of the shaft than the pivot pins 69 that pass radially out of the pivot bearing. In this regard, the masses 73 and 74 are not concentrically, radially, or otherwise provided on the pivot bearing, but rather axially abut the pivot bearing. Note that in FIG. 2, the pivot bearing is not readily visible because it is hidden behind the annular structure that holds the balance weights. In other words, the pivot bearing is deeper in the stack of components that is seen in FIG. 2.



the Yeakley patent
 FIG. 1 annotated



the Yeakley patent
 FIG. 2 annotated

Stated another way, in view of the entire disclosure of Yeakley, Yeakley's use of the phrase "*provided on*" cannot literally mean "*provided on*", but rather must mean "*abuts*" or "*abutting*".

Accordingly, the Examiner's reliance of this portion of Yeakley is flawed in at least two regards. First, the Examiner's use of Yeakley requires an improper interpretation of the pending claims in view of Yeakley's disclosure, instead of the present specification (as required). Second, the Examiner's use of Yeakley ignores that the Yeakley patent fails to enable the present claims. These points are addressed in more detail below.

The Examiner improperly interprets the recitations of *at least one balance mass provided on a wobble ring or pivot bearing* in view of Yeakley's disclosure, not the present application. As noted above, Yeakley discloses balance weights which are instead provided axially abutting or stacked against the wobble assembly. Accordingly, the Examiner relies on Yeakley's disclosure and lexicographic characterization of the phrase "provide on", meaning "abuttin", which is inconsistent with Applicant's own specification. According to Applicant's specification, "provided on" means mounted to or fixed to.

MPEP § 2111 provides that, during examination, although pending claims are given their broadest reasonable interpretation, such interpretation must be "consistent with the specification", stating:

--The Patent and Trademark Office ("PTO") determines the scope of claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction "in light of the specification" as it would be interpreted by one of ordinary skill in the art." In re Am. Acad. of Sci. Tech. Ctr., 367 F.3d 1359, 1364[, 70 USPQ2d 1827] (Fed. Cir. 2004). Indeed, the rules of the PTO require that application claims must "conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description." 37 CFR 1.75(d)(1)--(MPEP § 2111, emphasis added).

Stated another way, the claims must be interpreted in view of their own specification, not the disclosure of cited references. Accordingly, the Examiner's interpretation of a structure that is "*abuts*" ("provided on" according to Yeakley) as being *literally provided on or mounted to* (consistent with Applicant's specification) is improper and cannot stand.

Furthermore, Applicant respectfully asserts that Yeakley's cursory and technically inaccurate use of phrase "provided on" (and its surrounding context) is not enabling of Applicant's recitation of *at least one balance mass provided on a wobble ring or pivot bearing (and not across from a wobble finger or at an intersection of the wobble finger and ring or pivot bearing)*. MPEP §2121 states:

--"[i]n determining that quantum of prior art disclosure which is necessary to declare an applicant's invention "not novel" or "anticipated" within section 102, the stated test is whether a reference contains an "enabling disclosure"" *In re Hoeksema*, 399 F.2d 269, 158 USPQ 596 (CCPA 1968). The disclosure in an assertedly anticipating reference must provide an enabling disclosure of the desired subject matter; mere naming or description of the subject matter is insufficient, if it cannot be produced without undue experimentation (MPEP §2121 emphasis added).

By definition, Yeakley cannot be an anticipatory reference because it *merely names* "[b]alance weights 73 and 74 . . . provided on the wabblers" (Page 3, Line 16). Nowhere does Yeakley address how such weights might be mounted to or *literally provided on* a wobble ring, instead only showing that weights should axially abut the wobble ring or pivot bearing, whereby it is inconceivable how the Yeakley patent could somehow enable *at least one balance mass provided on (mounted to) a wobble ring or pivot bearing (and not across from a wobble finger or at an intersection of the wobble finger and ring or pivot bearing)*.

Turning now to the Cureton patent, it discloses a wobble plate or swash plate-type engine 10 that includes a wobble plate 28 that drives a hub 24 which is connected to a shaft 12 by a pin 26. As multiple pistons 36 reciprocate within cylinders 34 (FIGS. 1 and 5), they sequentially press against respective portions of the wobble plate 28, causing a precession-type rotation of the wobble plate, which forces the hub 24 and shaft 12 to rotate. Vibrations in the engine 10 are reduced by providing an air/oil mixture that serves as a lubricant and as a damping medium within space 80 of the joint connecting the piston 36 and the hub 24 (Col. 8, Lines 10-29). Vibrations are also reduced by providing opposed masses 140 and 142 on a shaft, and


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such that an axial distance therebetween is minimal, which is not disclosed or suggested in the cited prior art.

Conclusions

It is believed that all rejections have been addressed and overcome by the above arguments. Claims 1-19 are therefor in compliance with 35 U.S.C. §§ 102, 103, and 112, and each defines patentable subject matter. A Notice of Allowance is therefore respectfully requested. No fee is believed due with this communication. Nevertheless, should the Examiner consider any fee(s) to be payable in conjunction with this or any future communication, the Director is authorized to direct payment of such fees, or credit any overpayment, to Deposit Account No. 50-1170.

Respectfully submitted,



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Dated: April 14, 2009

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